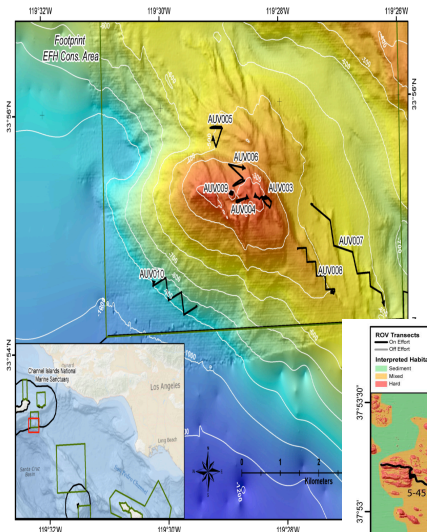
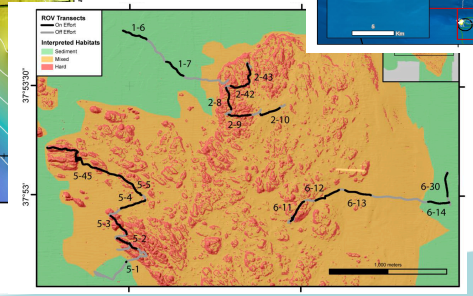
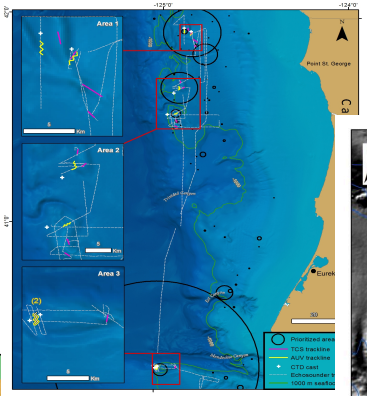
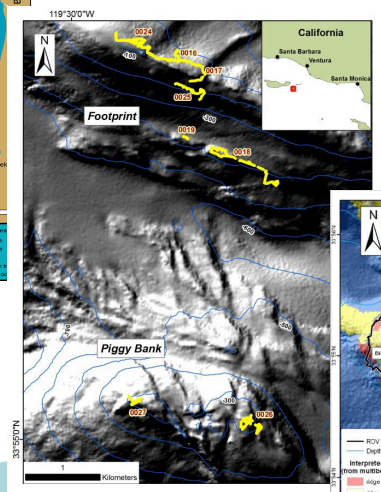
NOAA FISHERIES

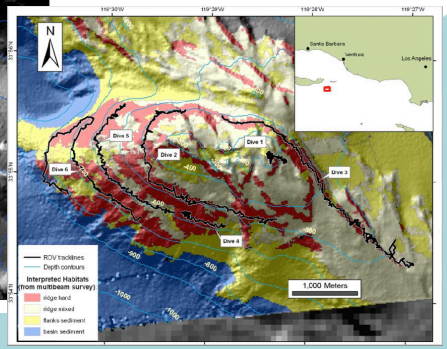
West Coast Regional Initiative 2010–2012









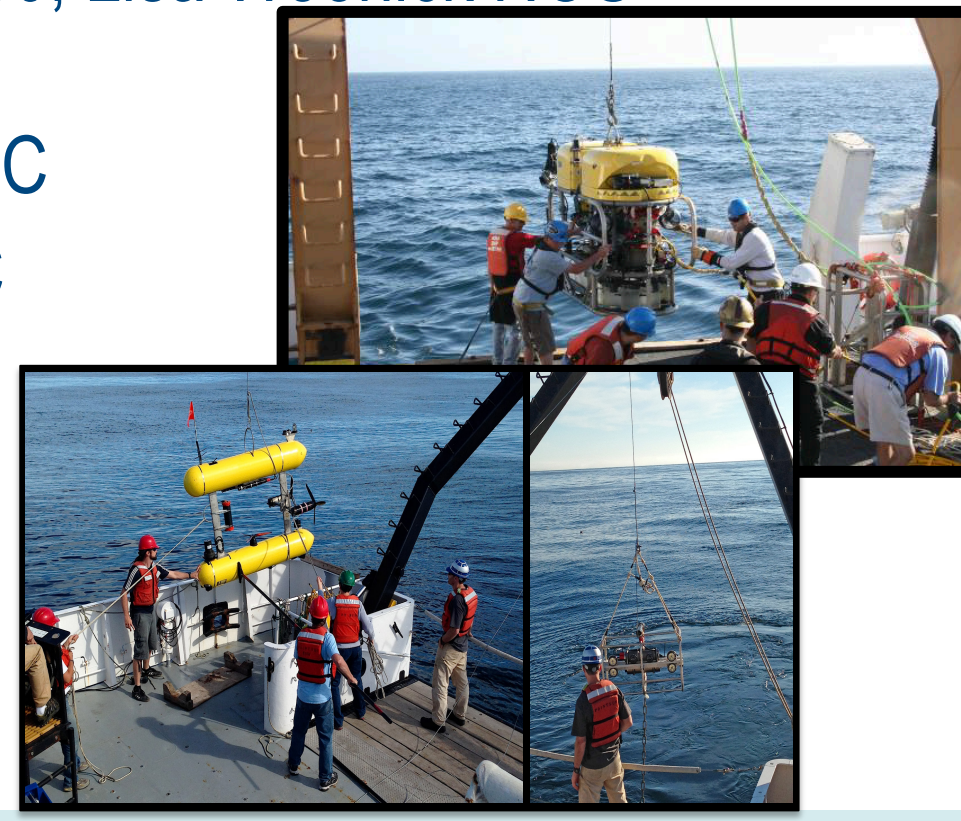


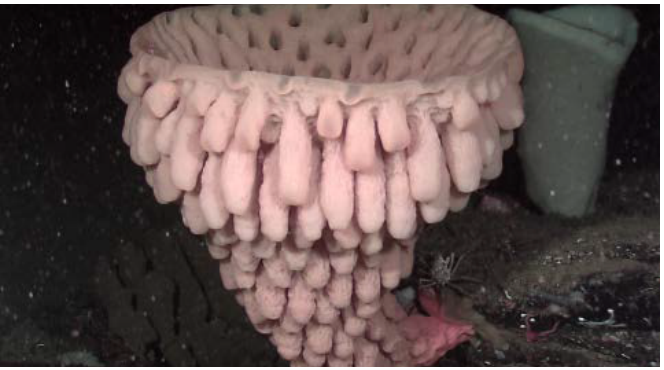
Objectives of the Initiative

- Priorities Established at Workshop Jan 20-21, 2010 Portland Oregon
- Thirty-eight participants from Tribes, States, Sanctuaries, Academia, the Pacific Fisheries Management Council, NGOs, Fishing Industry.

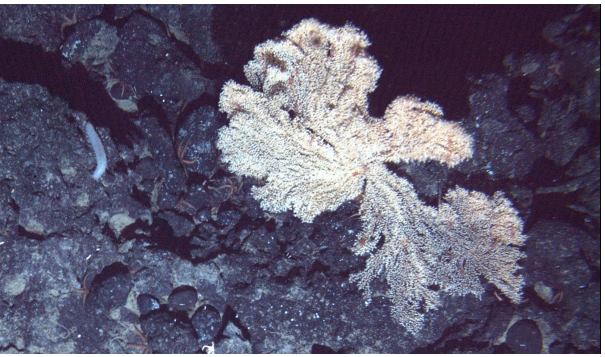
  - Identify deep-sea coral species distribution, abundance, densities, and diversity throughout the California Current Large Marine Ecosystem (LME).
  - Determine the ecological roles of deep-sea corals and sponges (nature of associations between deep-sea corals and sponges and other associate species (invertebrates and fishes)).
  - Understand the basic biology of deep-sea corals, including taxonomy, age structure, growth, gender, population connectivity, and life histories.
  - Inventorying and analysis of existing data was a critical need and in many instances a requirement to adequately address the critical information needs.

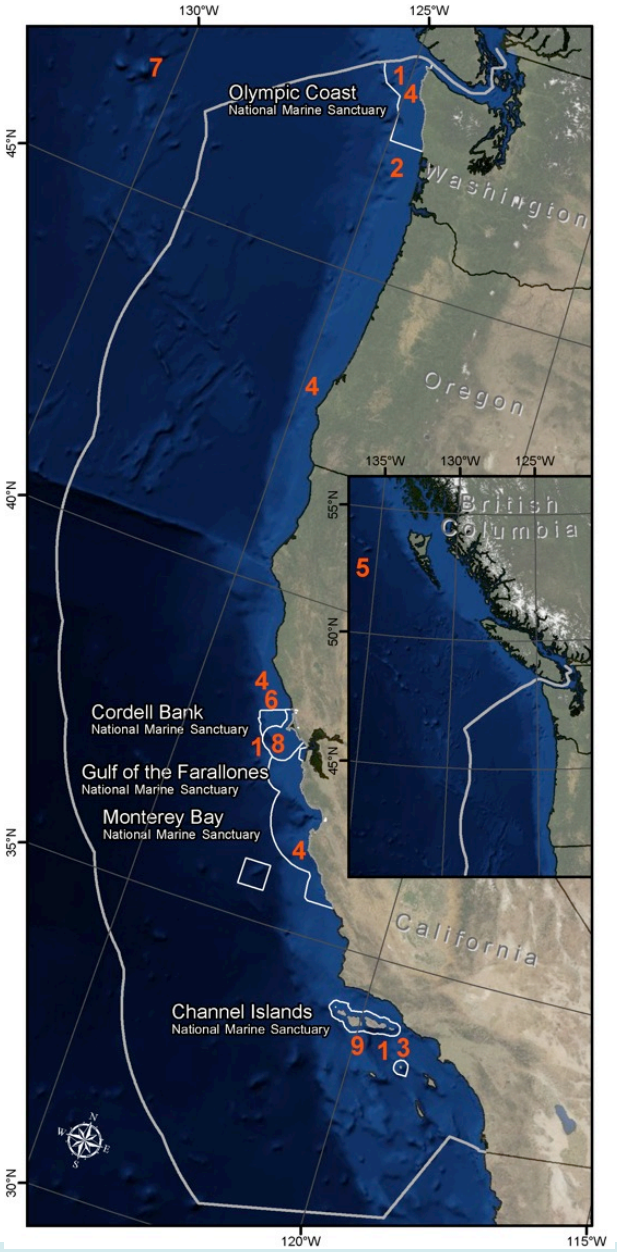
- Steering Committee (over 20 conference calls over the three years)
  - Ed Bowlby OCNMS 2010, Lisa Woonick NOS 2011-2012
  - Elizabeth Clarke NWFSC
  - Mary Yoklavich SWFSC
  - Dani Lipski CINMS
  - John Stadler NWR
  - John Tomczuk OAR

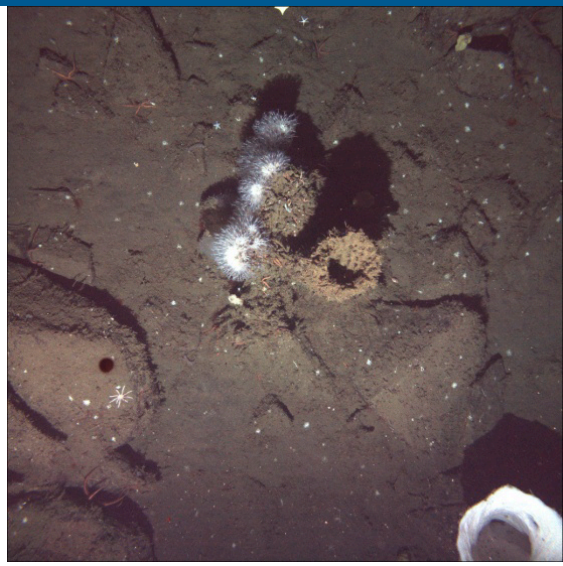




Initiative Study Sites

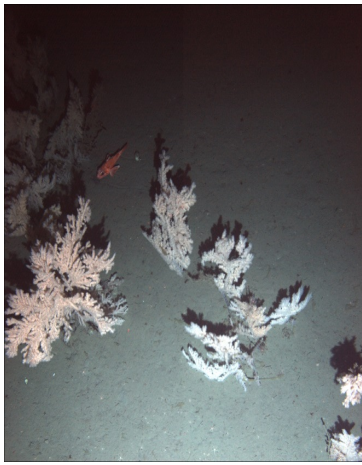






Summary of Work

- Fifteen projects or cruises funded
- Over 200,000 m^2 of ROV, SUB, AUV and TCS surveys
- Multibeam and sub-bottom surveys
- Proposal process with NURP
- 12 Site Characterizations from new data
- 2 Site Characterizations from previously collected data
- 3 Tech Memos
- 10 publications in peer-reviewed literature
- One dissertation



Accomplishments

Locations	Year	Vessel	Description	Program
Southern California Bight & Channel Islands	2010	NOAA Ship MacArthur II	ROV and AUV surveys of Piggy Bank. PI: M. Yoklavich & M.E. Clarke	NOAA DSCRTP
	2010	F/V Velero	Submersible surveys of Christmas tree black coral habitats in Channel Islands	NOAA DSCRTP
	2013	NOAA Ship Shearwater	ROV Surveys for deep-sea coral habitats in Channel Islands National Marine Sanctuary. PI: S. Katz	NOAA DSCRTP
Gulf of the Farallones NMS	2011	NOAA ship *Fulmar*	Multibeam survey of potential deep-sea coral habitats on Rittenburg Bank and Farallon Escarpment in Gulf of the Farallones National Marine Sanctuary.	NOAA DSCRTP
	2012	NOAA Ship Fulmar	Fine-scale survey of Rittenburg and Cochran Banks in Gulf of the Farallones National Marine Sanctuary. PI: J. Roletto	NOAA DSCRTP
Cordell Bank NMS	2010	NOAA Ship MacArthur II	ROV surveys in Cordell Bank National Marine Sanctuary. PI: D. Howard	NOAA DSCRTP

Accomplishments

Locations	Year	Vessel	Description	Program
Bodega Canyon	2011	NOAA ship *Fulmar*	AUV survey for potential deep-sea coral habitats in Bodega Canyon. PIs: L. Etherington & M.E. Clarke	NOAA DSCRTP
Northern California	2014	R/V Point Sur	Surveys of High Coral Bycatch Areas in the California, Washington Borderlands	NOAA DSCRTP
Grays Canyon	2010	R/V Pacific Storm	AUV surveys of glass sponge habitats near Grays Canyon. PI: M.E. Clarke	NOAA DSCRTP
Olympic Coast NMS	2010	NOAA Ship MacArthur II	ROV and AUV surveys in Olympic Coast National Marine Sanctuary. PI: E. Bowlby & M.E. Clarke	NOAA DSCRTP
	2011	R/V Pacific Storm	Multibeam survey of potential deep-sea coral habitats in Olympic Coast National Marine Sanctuary. PI: E. Bowlby	NOAA DSCRTP
Cobb Seamount	2012	R/V Tully	ROV and AUV surveys for corals and sponges on Cobb Seamount. . PI: M.E. Clarke & J. Curtis	NOAA DSCRTP & DFO Canada
Bowie Seamount	2011	R/V Tully	ROV and AUV surveys for corals and sponges on Bowie Seamount off British Columbia. PI: M.E. Clarke & J. Boutillier	NOAA DSCRTP & DFO Canada

Accomplishments – Proposal Process

Locations	Year	Description	Program
West Coast	2012	Life History Characteristics of West Coast Deep Sea Coral Species R. Waller	NOAA DSCRTP
Alaska and West Coast	2012	Ages, Growth Rates, and Climate Reconstructions from Deep-Sea Primnoidae Corals B. Williams and P. Etnoyer	NOAA DSCRTP

All projects addressed one or more of these goals

- Locate and characterize coral and sponge habitats. Collection of baseline data on abundance, size, condition, and distribution of deep-sea corals and sponges;
  - Successes include over 100 annotated dives for coral, sponges and habitat type on a variety of vessels along entire West Coast (over 200,000 m^2)
  - Fourteen standardized site characterizations completed and on portal
  - A variety of tools used separately and in tandem (ROV, AUV, TCS, SUB).
  - Creative use of a variety of ships to complete work – West Coast wide
  - Information provided for many management uses -
    - Provided information in time for EFH process on West Coast
    - Provided information in time for Sanctuary boundary/expansion analyses
    - Provided information for Sanctuary condition analysis
    - 2012 data are helping inform the sanctuary management of damage assessment from a sunken dry dock in Pioneer Canyon
    - West Coast BOEM project by NCCOS to model habitat suitability is using regional initiative information from DSC Portal
- Assess the condition of coral and sponge assemblages in relation to potential anthropogenic or environmental disturbances
  - High bycatch areas assessed and damage quantified. Marine debris quantified in site characterizations. Coral and sponge conditions quantified in some site characterizations
- Collect specimens of deep-sea corals, sponges, and associated organisms to confirm taxonomic identifications, and for genetic, reproductive, and stable isotope analyses.
  - Several new species described, many new records identified, genetic analysis of a variety of species ongoing, study of reproduction of eight species of octocorals completed (Feehan and Waller)

Challenges

- Little dedicated ship time especially time on vessel with multibeam
- Proposal process not particularly successful
- Early in program – not many tools available, especially ROVs
- Weather and equipment breakdown slowed progress in first year
- Government shut-down delayed completion of final project

Standardized Data Products

- 14 site characterizations
- 10 peer-reviewed publications - 7 more in preparation
- Data submitted to DSC Portal (multibeam to USGS or NCEI)

Initiative Operation

- Steering Committee with Coastwide and Multiple line office participation very important and successful
  - Explore inclusion of non-federal participants such as OET, DFO
  - Small Proposal process not successful.
  - Are site characterizations useful or should we concentrate on peer-reviewed publications and data portal submissions?

Operations 2010

CRUISE	LOCATION	MULTIBEAM MAPPING	DIVES			REPORTS	
			NUMBER	ANNOTATION	SUMMARY	CRUISE	SITE CHAR
MAC II Leg 1 ROV	Olympic Coast Sanctuary		1 ROV	Y	Y	Y	Y
MAC II Leg 1 AUV	Olympic Coast Sanctuary		2 AUV	Y	Y	Y	Y
MAC II Leg 2 ROV	West of Cordell Bank		1 ROV	Y	Y	Y	Y
MAC II Leg 3 ROV	Piggy Bank		8 ROV	Y	Y	Y	Y
MAC II Leg 3 AUV	Piggy Bank		8 AUV	Y	Y	Y	Y
Velero II	Channel Islands		12 SUB	Y	Y	Y	Y
Pacific Storm	Grays Canyon	75 km^2	5 AUV	Y	Y	Y	Y
TOTAL			**37 Dives**				

Operations 2011-2012

CRUISE	LOCATION	MULTIBEAM MAPPING	DIVES			REPORTS	
			NUMBER	ANNOTATION	SUMMARY	CRUISE	SITE CHAR
Fulmar	Rittenburg Bank and Farallon Escarpment	180 km^2	0		Y	Y	Y
Tully	Bowie Seamount		6 AUV, 7 ROV	Y	Y	Y	N
Pacific Storm	Olympic Coast	10 km^2	0		Y	Y	N
Fulmar	Bodega Canyon		4 AUV	Y	Y	Y	Y
Tully	Cobb Seamount		4 AUV, 12 ROV	Y	Y	Y	Y
Fulmar	Rittenburg Bank and Farallon Escarpment		9 ROV	Y	Y	Y	Y
TOTAL			**42 Dives**				

Operations 2013-2014

CRUISE	LOCATION	MULTIBEAM MAPPING	DIVES			REPORTS	
			NUMBER	ANNOTATION	SUMMARY	CRUISE	SITE CHAR
Shearwater	Channel Islands		9 ROV	Y	Y	Y	N
Point Sur	Northern California		6 AUV, 9 Towed Camera Sled	Y	Y	Y	Y

Regional Initiative and Small Projects

Yes, regional initiative fieldwork important to seeding new small projects…

- Excellent collaboration between small DSC funded project on genetic studies and Regional initiative field studies – this includes another DSC small project on enhancement of sponge and coral field guides
- Follow on study with OET to study sponge reefs
- Olympic Coast and So Cal data being used by small project proposal funded by DSC on habitat modeling
- Data and insights used for small project – "A summit on the role of deep-sea corals and sponges as habitat for managed species off the West Coast and Alaska."

Future Plans and Priorities

- Expand multibeam collections with validation
  - Prioritized areas in need of multibeam data collection and ROV/AUV dives in areas where portion of current EFH are likely to be opened but where there is incomplete characterization of benthic communities.
  - Prioritize collections in areas where wave and wind farm sites may be proposed.
- Expand collection of samples for life history and taxonomic studies
  - Need time with vessel and ROV capable of sampling corals, sponges and geology.